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October 24, 1996

Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: FCC NOI 96-382
WTC Docket No. 96-198

Implementation of Section 255 of the Telecommunications Act of 1996, Access to Telecommunications Services, Telecommunications Equipment, and Customer Premises Equipment By Persons with Disabilities

Comments Submitted By:

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Arkenstone is a 501(c)(3) nonprofit charitable organization dedicated to providing access to information for people with disabilities. Our primary efforts are devoted to development and manufacture of adaptive equipment for use as tools for our users to obtain information access. As such, we are one of the largest makers of adaptive equipment for blind people in the United States, and probably the largest volume supplier of reading systems for the blind in the world. Although our initial efforts have been focused on the blind, we also have many users with low vision or learning disabilities.

We have pioneered the industry-standard Speech Synthesizer Interface Library ("SSIL"), which Arkenstone developed and distributes at no charge, which is used by developers of software applications to make their programs "talk" to people with disabilities.

Arkenstone is also the sole representative of the manufacturers of adaptive technology on the Telecommunications Access Advisory Committee. As such, Arkenstone appreciates the FCC's efforts in issuing the NOI and the beneficial effects of the record so generated on the efforts of the TAAC.

Mr. Fruchterman is Arkenstone's representative on TAAC and Arkenstone's founder and chief executive. He holds B.S. and M.S. degrees from the California Institute of Technology and is a member of IEEE and other engineering and industry associations.

As an entrepreneurial engineer, he has started numerous companies, including Calera Recognition Systems, Inc., the first developer of omnifont optical character recognition. His involvement with OCR technology led him to found Arkenstone to provide the benefits of this technology to people with disabilities. He was recently awarded a patent on Arkenstone's newest invention, Strider, a talking GPS locator and map device that tells blind people their current location while traveling.

Summary Statement:

Arkenstone is excited about the opportunity the Telecommunication Act provides to improve access to information for our clients. Because we fundamentally feel that telecomm will be the primary channel for information access in the future, Section 255 holds the promise of breaking down many of the barriers to education, employment and personal advancement faced by people with disabilities. This is especially true for those people with disabilities that affect information access, such as sensory and learning disabilities.

Our comments overall are aimed at ensuring that Section 255 actually delivers on its promise of improved access. We are certain that accessibility is readily achievable, and we want manufacturers of CPE and providers of telecomm services to make an honest effort to achieve accessibility. Accessibility is a technical requirement that sometimes will be as simple as adhering to a specific standard, or sometimes will require original design ideas, but in all cases must be carefully considered. Any line of reasoning that leads to a loophole that will gut Section 255 concerns us greatly.

We share many of the views expressed by Chairman Hundt in his statement that accompanied the NOI. We want clear guidelines for manufacturers that give them straightforward guidance on what they need to consider while designing and making products. We cannot stifle innovation by writing narrow regulations that constrain designers with the problems of yesteryear, or be so vague that nothing is done. Because of

convergence, and the ease of shifting functions from CPE to the network to a service provider, we need to coordinate the guidelines to ensure that access is sensibly addressed rather than creating incentives to construct features in a way to avoid addressing access concerns.

Comments by paragraph

7. **Enforcement:** We feel that the FCC should actively establish rules and regulations. Access is a often a technical issue, and manufacturers need technical guidance on achieving it. At the same time, the rules should be written to allow for innovation in both telecomm equipment and access solutions.

8. **Definition of Telecommunications Services:** However people are delivering services based on telecommunications, they need to consider access. Too many real access problems lie unsolved because it's considered somebody else's problem. The Internet is an area of special concern to Arkenstone and its users. For people without the ability to access text information directly, the Internet and other on-line services represent a huge goldmine of theoretically accessible information. However, the attitude of many service and product providers is that access is not their problem. They must be part of the solution, or people with disabilities will continue to be shut out or dramatically delayed in their participation in an arena that should be especially well suited to their needs.

9. CPE: Arkenstone feels strongly that products that have telecommunications capabilities are CPE, whether or not their primary use may be something else. The current rage in the computer industry is that every PC will be connected to the Internet and provide a wide range of telecomm services from voice telephony to video conferencing to the Web to video on demand. If these products which are trying so hard to take over the CPE world are not covered by Section 255, then we will have found another way to put the makers of traditional CPE at a tremendous disadvantage in what should be a consumer and market driven battle for the future of CPE. The definition is pretty clear in the statute – we don't think it should narrowed.

10. Network features: Makers of network equipment have two obligations for access. The first one is a obligation to not interfere with access provisions offered at CPE. For example, the compression technique to transmit video over the network should not destroy a secondary audio track placed in the video for deaf or blind consumers. The second obligation is not to become part of evading access requirements by moving what would normally be CPE functionality into the network.

11. International makers of equipment: Arkenstone also feels strongly that international makers of telecomm equipment need to meet the same access requirements placed on domestic manufacturers. To do otherwise would be to give international makers a competitive advantage over domestic producers.

Arkenstone is involved in over 45 countries, even though the bulk of our activities are in the U.S. We hear repeatedly about how the ADA is regarded as a shining example of civil rights for people with disabilities, an example other countries are trying to emulate. We believe Section 255 will become a similar shining example. Just because the U.S. is the world leader in advancing rights and protections to people with disabilities is no reason to backtrack and allow foreign manufacturers to do nothing, because that's what they do today for their consumers with disabilities in most countries.

This does not mean the U.S. should pursue unilateral efforts in accessibility indefinitely. The EC has efforts underway in this area, and we believe that the guidelines should allow for harmonization of regulations. However, harmonization only works when the two parties have similar objectives and are trying to avoid two different standards where one will accomplish the same goal. It does not apply when one region has no or minimal standards.

12. Tiers of manufacturers: We believe that all manufacturers have the obligation to provide access if it is readily achievable. For the modem maker, the only access provision that is readily achievable might be implementing v.18 for TTY compatibility. For the provider of a complete telecommunications installation for a large business, the obligations are far more extensive. They are not evaded by claiming that accessibility was someone else's responsibility. Readily achievable is the standard for each manufacturer.

16. Readily achievable timing: A reasonable compromise needs to be struck between requiring companies to be entering into redesign cycles purely for accessibility reasons, and allowing inaccessible products to stay on the market indefinitely.

17. Cost: Many of the problems faced by people with sensory disabilities can easily be addressed by simple design changes. If this isn't true of some products, then the modifications necessary to ensure compatibility with specialized CPE and adaptive equipment are also simple. So many of the new generation of CPE devices will be driven primarily by software on top of hardware with some general capabilities.

If we use today's multimedia PC as an example of a piece of CPE, it already has a visual display and a highly capable sound card. The great majority of types of information provided to assist the control of the PC, and the content, can be provided in multiple forms. For instance, visual indicators can be replaced by tones, and visual text can be spoken by a voice synthesizer. Audible tones can easily be rendered visually. A relay service could turn voice telephony into TTY format, which could be displayed visually. What was involved in such an effort? No more than $25 worth of software, from including text-to-speech algorithms, allowing multiple display options, and making an advanced modem v.18 compatible. Is that readily achievable in the context of a $2000 PC. We think so!

If we turn to the needs of someone who is both deaf and blind who uses braille to get information, they require adaptive equipment that costs more than that PC today. It's not readily achievable to include a braille display terminal with every PC made. It is reasonable to make sure that the visual information, such as text, displayed on the screen is sent to the display terminal. All that's needed is a little software to send that information to the terminal over the existing hardware I/O port.

Many of the access needs of people with disabilities cannot be solved by a simple application of software. However, many of them can be solved by early design efforts to avoid creating barriers to access.

21. Accessible: Arkenstone has proposed a definition for accessibility to TAAC.

22. Product line access: Arkenstone would like to see that all products are made accessible to the extent that it is readily achievable.

23. State of access: As already noted, access to information available through telecomm is a huge problem for people with sensory and learning disabilities. Visual information is increasingly graphical, and the tools to access graphical user interfaces are crude and usable only by technically skilled users. Unfortunately, the future of much CPE is predicated on a GUIs.

25. Specialized equipment, commonly used: We have already mentioned braille displays for blind people. Even though less than a thousand braille displays a year are sold, we feel that they are commonly used for people with blindness, and for people who are deaf and blind they represent the only option for telecomm access.

Enlargement software to increase the display size of information is in common use for people with low vision. Talking software and hardware that uses a synthetic voice to speak text is probably the most common access mechanism for blind people who use computers. This mechanism is also being used by increasing numbers of people with learning disabilities.

29. Services vs. equipment: We think there need to be very similar guidelines in place for both equipment and services.

36. Nullification through 208 vs. 255: We advocate that Section 208 not effectively nullify Section 255 for complaints about equipment.

40. Cross-defense: We do not feel that blaming another party for lack of access is sufficient defense, if access was readily achievable by the defendant.

Thank you for your kind review of our comments on the NOI.

Sincerely,

James R. Fruchterman
President